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Please find below and/or attached an Office communication concerning this application or proceeding.

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/030,282 Filing Date: March 25, 2002 Appellant(s): HOFMANN ET AL.

Mr. Michael J. Striker For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 8/21/2008 appealing from the Office action mailed 5/19/2008.

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(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The amendment after final rejection filed on 8/21/2008 has been entered.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

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The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,201,798	CAMPANELLA et al	3-2001
6,353,637	MANSOUR et al	3-2002
6,370,666	LOU et al	4-2002

Nahrstedt, Klara. "An Architecture For End-to-End Quality of Service Provision and Its Experimental Validation" PhD Thesis, Department of Computer and Information Science, University of Pennsylvania, August 1995, pp. 1-149

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-2, 4-5, and 7-8 stand rejected under 35 U.S.C 103(a) as being unpatentable over Mansour et al (*U.S. Patent: 6,353,637*) in view of Nahrstedt (*"An Architecture For End-to-End Quality of Service Provision and Its Experimental Validation," 1995*) and further in view of Campanella et al (*U.S. Patent: 6,201,798*). This rejection is set forth in a prior Office Action, mailed on 05/19/2008.

Claim 6 stands rejected under 35 U.S.C 103(a) as being unpatentable over Mansour et al (U.S. Patent: 6,353,637) in view of Nahrstedt ("An Architecture For Endto-End Quality of Service Provision and Its Experimental Validation," 1995) in view of

Campanella et al (*U.S. Patent:* 6,201,798) and further in view of Lou et al (*U.S. Patent:* 6,370,666). This rejection is set forth in a prior Office Action, mailed on 05/19/2008.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-2, 4-5, and 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mansour et al in view of Nahrstedt ("An Architecture for End-to-End Quality of Service Provision and Its Experimental Validation," 1995), and further in view of Campanella et al (U.S. Patent: 6,201,798).

With respect to Claims 1 and 7, Mansour discloses:

A method for transmission-end preparation of source-coded audio data of at least one useful signal source, in particular for transmission via AM channels (*IBOC-AM system, Col. 4, Lines 5-53*) of a predetermined channel raster with the following features:

The source coded audio data of at least one useful signal source are separated into a main data stream and at least one auxiliary data stream (dividing coded audio into a core audio stream (C-stream) and enhancement streams (E_1 and E_2 streams), Col. 4, Lines 37-53 and Col. 5, Lines 4-27);

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Wherein the main data stream contains at least the amount of information that is required for a comprehensible reproduction of at least one useful signal source (*C-stream that provides minimum acceptable audio quality upon recovery at a receiver, Col. 4, Lines 37-53*) and the auxiliary data stream contains information for quality improvement (*enhancement streams that allow for higher audio quality when combined with a recovered C-stream, Col. 4, Lines 37-53*);

The main and auxiliary data streams are modulated and accommodated in respective different channels of the predetermined channel raster (modulation of core and enhancement audio streams at a modem and transmission of the steams using different channels, Col. 5, Line 52- Col. 6, Line 45; Fig. 2; and Col. 8, Lines 61-65; wherein channels can correspond to communication broadcast channels, Col. 3, Line 50- Col. 4, Line 4).

Although Mansour suggests that his invention can alternatively be carried out with a plurality of communication channels ("the invention may be utilized with any desired type of communication channel or channels," Col. 3, Line 50- Col. 4, Line 4), Mansour only suggests such an implementation. Transmitting base and enhancement coded audio streams in different broadcast channels is well known in the art, however, as is explicitly evidenced by the teachings of Nahrstedt (multiple priority transmission channels used to transmit voice data from different streams, Pages 49-50).

Mansour and Nahrstedt are analogous art because they are from a similar field of endeavor in coded audio transmission systems utilizing core and enhancement data. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Mansour with the priority channels concept taught by Nahrstedt in order to maintain a higher quality of signal over larger data loss ranges (Nahrstedt, Page 49).

Although Mansour in view of Nahrstedt discloses transmitting coded audio core and enhancement layers on different transmission channels, Mansour in view of Nahrstedt does not explicitly disclose that a core audio stream includes signaling relating to whether an auxiliary stream is provided and the channel where such a stream is located. Campanella, however, recites a service control header that is inserted in each audio bit stream frame that includes an auxiliary content indicator and data for referencing an auxiliary data channel (Col. 1, Line 63- Col. 2, Line 4; Col. 2, Lines 46-55; and Col. 23, Line 64- Col. 24, Line 62).

Mansour, Nahrstedt, and Campanella are analogous art because they are from a similar field of endeavor in coded audio transmission systems utilizing core and enhancement data. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, modify the teachings of Mansour in view of Nahrstedt with the service control header taught by Campanella in order to implement a means for dynamically controlling the reception of an audio broadcast at a remote receiver (Campanella, Col. 2, Lines 3-4).

With respect to **Claim 2**, Mansour discloses the transmission-end preparation method and system, as applied to Claims 1 and 7, and additionally recites:

A receiver with low reproduction quality is used to demodulate and decode only the main data stream (core audio stream processing at a receiver, Col. 6, Line 46- Col. 7, Line 12);

A receiver with higher reproduction quality is intentionally used to demodulate and decode only the main data stream or the main data stream and at least one associated auxiliary data stream are demodulated and decoded, where mutually associated demodulated and decoded data streams are linked to one another in such a way that an increase is achieved in the reproduction quality for the at least one useful data source (demodulating and decoding core and

enhancement audio streams and blending the streams together to generate higher quality recovered audio, Col. 6, Line 46- Col. 8, Line 34 and Col. 4, Lines 37-53).

Although Mansour suggests that his invention can alternatively be carried out with a plurality of communication channels ("the invention may be utilized with any desired type of communication channel or channels," Col. 3, Line 50- Col. 4, Line 4), Mansour only suggests such an implementation. Transmitting base and enhancement coded audio streams in different broadcast channels is well known in the art, however, as is evidenced by the teachings of Nahrstedt (multiple priority transmission channels used to transmit voice data from different streams, Pages 49-50).

Mansour and Nahrstedt are analogous art because they are from a similar field of endeavor in coded audio transmission systems utilizing core and enhancement data. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Mansour with the priority channels concept taught by Nahrstedt in order to maintain a higher quality of signal over larger data loss ranges (*Nahrstedt*, *Page 49*).

Although Mansour in view of Nahrstedt discloses transmitting coded audio core and enhancement layers on different transmission channels at a transmitting end, Mansour in view of Nahrstedt does not specifically suggest that a core audio stream includes signaling relating to whether an auxiliary stream is provided and the channel where such a stream is located. Campanella, however, recites a service control header that is inserted in each audio bit stream frame that includes an auxiliary content indicator and data for referencing an auxiliary data channel (Col. 1, Line 63- Col. 2, Line 4; Col. 2, Lines 46-55; and Col. 23, Line 64- Col. 24, Line 62).

Mansour, Nahrstedt, and Campanella are analogous art because they are from a similar field of endeavor in coded audio transmission systems utilizing core and enhancement data. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, modify the teachings of Mansour in view of Nahrstedt with the service control header taught by Campanella in order to implement a means for dynamically controlling the reception of an audio broadcast at a remote receiver (Campanella, Col. 2, Lines 3-4).

With respect to **Claim 4**, Campanella further discloses an auxiliary data content indicator (Col. 2, Lines 46-55) and a service component control field that indicates how main and auxiliary data is decoded (Col. 3, Lines 25-36).

With respect to **Claim 5**, Mansour discloses the means for blending core and enhancement audio streams, as applied to claim 2, and further notes the use of enhancement streams for adding stereo components (*Col. 9, Lines 9-11*).

Claim 8 contains subject matter similar to Claims 2 and 4, and thus, is rejected for the same reasons.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mansour et al in view of Nahrstedt ("An Architecture for End-to-End Quality of Service Provision and Its Experimental Validation," 1995), in view of Campanella et al (U.S. Patent: 6,201,798) and further in view of Lou et al (U.S. Patent: 6,370,666).

With respect to **Claim 6**, Mansour in view of Nahrstedt, and further in view of Campanella discloses the method and system for dividing coded audio into core and enhancement audio streams for transmission-end processing, as applied to Claim 1. Mansour in

view of Nahrstedt, and further in view of Campanella does not specifically suggest that the scalability of MPEG 4 data streams is used to separate the source-coded audio data into main and auxiliary data streams, however Lou discloses the use of MPEG 4 for dividing coded audio into main and auxiliary data (Col. 6, Lines 17-33).

Mansour, Nahrstedt, Campanella, and Lou are analogous art because they are from a similar field of endeavor in coded audio transmission systems utilizing core and enhancement data. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, modify the teachings of Mansour with the use of MPEG 4 for dividing coded audio into main and auxiliary data as taught by Lou in order to enable the creation of enhancement layers that provide for higher quality audio reproduction (*Lou, Col 6, Lines 17-33*) using a well-known coding standard that can be implemented using readily available audio coders.

(10) Response to Argument

With respect to independent claims 1-2 and 7-8, the appellant argues that the prior art combination of Mansour et al (U.S. Patent: 6,353,637), Nahrstedt ("An Architecture For End-to-End Quality of Service Provision and Its Experimental Validation," 1995), and Campanella et al (U.S. Patent: 6,201,798) fails to teach the use of respective different AM frequency channels for transmitting main and auxiliary audio information and signaling in a main data stream that indicates the presence of auxiliary audio and in what channel it is provided (Appeal Brief, Pages 7-11). The appellant further argues that the applied rejection under 35 U.S.C. 103(a) lacks motivation and is based upon impermissible hindsight reasoning (Appeal Brief, Pages 7-11). Before

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addressing the specific points of the appellant's arguments, the examiner notes that a summary of the prior art as it applies to the aforementioned claims would be useful and is provided below.

Mansour teaches a system and method for audio coding and transmission via AM channels (IBOC-AM system using AM frequency carriers, Col. 3, Line 66- Col. 4, Line 53). In the system/method, Mansour teaches that an incoming audio signal is divided into a core or main audio stream (C-Stream) and auxiliary, enhancement streams (E-Stream) (Col. 4, Lines 37-53; and Col. 5, Lines 4-27), which corresponds to the main data stream (HD) and the auxiliary data stream (ZD) in the appellant's claimed invention. The C-stream, when decoded provides "minimum acceptable quality" while the E-stream provides higher audio quality when decoded with the C-stream (Col. 4, Lines 37-53), as is required by the appellant's claimed invention. These streams are modulated and accommodated in respective different audio channels of a channel raster in the form of various modems that modulate the C and E streams with various frequency carrier for transmission over their corresponding channels (Col. 5, Line 52-Col. 6, Line 45; Fig. 2, Elements 230a-c), wherein the channels can correspond to separate AM broadcast channels (Col. 3, Line 66- Col. 4, Line 4). Thus, Mansour's transmission system is guite close to that claimed by the applicant in claims 1 and 7.

Mansour, however, only suggests other aspects of the claimed invention. These aspects are the use of independent AM frequency channels for transmission of the main and auxiliary audio data and the signaling to indicate the presence of auxiliary data.

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Mansour's suggestion for separate channels is clear, however, as is evidenced in Col. 3, Line 66- Col. 4, Line 4. In this portion of the reference, Mansour recites that his invention can be performed using separate, plural channels, which as was noted above. correspond to AM channels having an associated AM frequency carrier used in modulation/channel assignment (i.e., the raster). Further evidence for Mansour's ability to use different AM frequency channels having different carrier frequencies can be found in Fig. 2. Elements 230a, b, and c of this drawing show that each audio channel (C and E-streams) can be separately modulated with a different frequency carrier for different channels (i.e., a multi-channel carrier modem). The only question that remains then is why would one of ordinary skill in the art be motivated to configure the system of Mansour to utilize the separate AM frequency channels, which is only suggested in Mansour, but of which Mansour is clearly capable of implementing due to his suggestion of using communication "channels" and his *multi-carrier* modem, which would only need to be set to different channel carriers to achieve this limitation of the applicant's invention. This motivation is provided by Nahrstedt. Nahrstedt teaches the use of separate communication channels with different priorities (i.e., the data streams more important for reconstruction are maintained in favor of lower priority channel information, which is dropped to relieve periods of congestion, Pages 49-50). Such a separate channel configuration allows a lower priority channel, not as important for audio reconstruction (i.e., the E-stream in Mansour), to be dropped to relieve conditions of congestion (Pages 49-50). In the single channel configuration of Mansour in which the different audio streams are sent in different subbands using one carrier frequency, such

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flexibility would not be achieved because if the whole channel were to be dropped in conditions of congestion, no audio would received. Configuring the system of Mansour by merely setting the carrier frequencies of the multi-carrier modem shown in Fig. 2 would enable a C-stream to be received in periods of congestion because an E-stream could be dropped. Thus, there is clear motivation, provided by the priority channels of Nahrstedt, to utilize this multi-priority, multi-channel configuration of Mansour.

Although Mansour in view of Nahrstedt teaches a method and system for coding audio data in the form of a main stream (C-stream) and auxiliary (one or more Estreams, Mansour, Col. 8, Lines 61-65; and Col. 4, Lines 47-53), this prior art combination does not specifically teach signaling inserted into the main data stream of the transmitter, which indicates whether an auxiliary stream is provided and in what channel it is located. Campanella, however, recites a service control header inserted into a main data stream at a transmitter that controls how data is handled at a remote receiver (Col. 1, Line 63- Col. 2, Lines 4; and Col. 2, Lines 46-55). This auxiliary or secondary data is placed in a header of a primary or main channel and allows this main channel to be aware of and link to the location of auxiliary data in "other broadcast channels" for processing at a receiver (Col. 24, Lines 29-63). The addition of this header to the teachings of Mansour and Nahrstedt allows for proper retrieval of auxiliary data at a receiver for dynamic control over audio broadcast reception (Campanella, Col. 2, Lines 3-4), so that improved audio data playback can be realized (Mansour, Col. 4, Lines 37-53). Thus, the combination of Mansour, Nahrstedt, and Campanella teaches

the independent claims directed to the transmitter embodiments of the applicant's claimed invention (Claims 1 and 7).

In addition to the above described transmitter embodiment, Mansour also recites an embodiment directed to a receiver. In this embodiment, Mansour teaches a receiver with lower production quality that demodulates and decodes only the C-stream to provide the minimum acceptable audio quality (Col. 6, Line 40- Col. 7, Line 12; and Col. 4, Lines 37-53), which corresponds to the applicant's main stream decoder. Mansour also teaches a receiver with higher audio reproduction quality used to demodulate, decode, and combine the main C-stream and auxiliary C-stream (Col. 6, Line 46- Col. 8, Line 34; and Col. 4, Lines 37-53), which corresponds to the applicant's claimed step/receiver for higher quality audio reproduction. Also, with respect to these claims, the independent AM channels and signaling information are taught by the combination of Mansour, Nahrstedt, and Campanella, as was noted above. Thus, this prior art combination teaches the independent claims directed to the receiver embodiments of the applicant's claimed invention (Claims 2 and 8).

With the above interpretation in mind, the examiner will now address each of the appellant's arguments. The appellant first argues that Mansour does not teach "respective different independent AM frequency channels" because the channels in Mansour are subbands and are not independent from one another (Appeal Brief, Pages 8-9). In response, the examiner notes that Mansour clearly suggests system implementation using different "communication channels" (Col. 3, Line 66- Col. 4, Line

16). Mansour also features several multi-carrier modems, which can assign the different carrier frequencies required for transmission over separate AM communication "channels" to the C and E streams (Col. 5, Line 52- Coll. 6, Line 45). Thus, Mansour specifically suggests the use of separate AM communication channels and discloses the hardware needed for carrying out such a configuration. The teachings of Nahrstedt provide the specific motivation for altering Mansour's invention to operate as it is already capable of operating, as was explained above. Nahrstedt discloses that using different priority-based communication channels allows for the ability to drop lower priority packets not as important for constructing a main data stream (i.e., E-stream in the case of Mansour, as the C-stream provides the main audio data) in order to cope with communication congestion (Pages 49-50). Looking to Nahrstedt then, it would be clear to one of ordinary skill in the art that modifying the system of Mansour to support his suggested "different communication channels" provides this notable benefit. Thus, the teachings of the independent AM channels is taught by the combination of the teachings of Mansour and Nahrstedt not just Mansour as is argued by the appellant, and these arguments are not convincing.

The appellant next argues that Nahrstedt does not cure the alleged deficiencies of Mansour because Nahrstedt "does not describe or suggest transmitting base and enhancement coded audio streams in respective independent AM frequency channels" (Appeal Brief, Page 9). Based on such logic, the appellant further argues that one of ordinary skill in the art would not look to combine Nahrstedt with Mansour (Appeal Brief, Page 9). In response, the examiner notes that the use of independent AM frequency

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communication channels is strongly suggested and capable of being supported in Mansour's invention, as is detailed above ("communication channels", Col. 3, Lines 66-67; AM frequency channels having different carrier frequencies, Col. 4, Lines 5-16; and multi-carrier frequency modulators capable of assigning different carrier frequencies to the main and enhancement audio streams, Col. 5, Line 52- Col. 6, Line 45). The Nahrstedt reference is only relied upon to provide the teaching/motivation as to why one of ordinary skill in the art would modify Mansour to operate in a configuration which Mansour's invention is already capable of supporting via priority channels. Specifically, Nahrstedt's priority-based different communication channels are relied upon because they provide the benefit of being able to drop channels which are not required for audio reproduction (i.e., the E-stream in Mansour) in favor of receiving more critical channels during periods of congestion (i.e., the C-stream in Mansour) (Nahrstedt, Pages 49-50). In Mansour's single channel embodiment, during periods of congestion, C and E streams would both be dropped. Looking to Nahrstedt's teachings then, it would be apparent to one of ordinary skill in the art that a multi-channel configuration would allow for critical stream to be received (C-stream) and still cope with periods of congestion by dropping those audio channels less important to base audio reconstruction at a receiver (E-stream). Additionally, in response to these arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); In re Merck & Co., 800 F.2d 1091, 231

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USPQ 375 (Fed. Cir. 1986). Thus, these arguments have been fully considered, but are not persuasive for the preceding reasons.

The appellant next presents arguments directed to the teachings of Campanella. First, the appellant argues that Campanella does not teach the use of independent AM frequency channels (Appeal Brief, Page 9); however, as was previously described, this teaching is provided by the combined teachings of Mansour and Nahrstedt. The appellant secondly argues that the information in Campanella's data frames are found in the same frames, so they cannot belong to independent broadcast channels decoded in different units (Appeal Brief, Page 9). In response, the examiner notes that Campanella specifically discloses that a primary service channel (C-stream in Mansour) includes an auxiliary/secondary service channel indicator that indicates that secondary data is present and references the broadcast channel with which it is associated (Col. 23, Line 64- Col. 24, Line 6; and Col. 24, Lines 29-62). Furthermore, Campanella specifically states that in addition to a "primary service, other broadcast channels carry the associated secondary services which can generally be received by properly equipped radio receivers" (i.e., receivers equipped with more than one channel recovery device) (Col. 24, Lines 29-62). Also, it is worth noting that Mansour additionally teaches a multichannel decoder (Fig. 3) that individually processes incoming main and auxiliary audio streams. Thus, this argument has been fully considered, but is not convincing. The appellant proceeds to argue that Campanella "does not teach or suggest adding signaling into a main data stream on the transmitter to indicate whether an auxiliary is provided for a signal source, including identifying which respective different independent

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AM frequency channel said signal source is provided" (Appeal Brief, Page 10). This argument fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references. In response, however, the examiner notes that broadcast channels in the form of independent AM frequency channels is taught by the combination of Mansour and Nahrstedt, as was noted above. Next, it is pointed out that to enable the reception of audio data to be better controlled (Campanella, Col. 1, Line 63- Col. 2, Line 4), Campanella specially teaches the transmission of a header in a "primary service" broadcast channel that denotes and references "associated broadcast channels" that carry secondary services" (Col. 23, Line 64- Col. 24, Line 6; and Col. 24, Lines 29-62). The use of such an indicator enables proper and dynamic control of the additional channel at a receiver (Campanella, Col. 2, Lines 3-4; and Col. 24, Lines 29-62). Thus, for at least the foregoing reasons, this argument has been fully considered, but is not convincing.

Finally, the appellant argues that the examiner relied upon hindsight reasoning to arrive at the appellant's invention because the "cited art must itself contain a suggestion for such a modification" (Appeal Brief, Pages 10-11). In response, the examiner notes that such a suggestion is not required, but is a stronger rationale for combining the references (See MPEP 2144 (II)). In this case, motivation has been in fact provided by the references themselves. Nahrstedt teaches the benefit of using independent priority channels to better deal with congestion as is described above, while Campanella allows

for more dynamic and proper processing/reception of secondary information at a

receiver, as is also described above. Thus, since the motivation for combining the prior

art of record is found in the references themselves, this argument has been fully

considered, but is not convincing.

The art rejections of the associated dependent claims are traversed for reasons

similar to the independent claims (Appeal Brief, Pages 11-12). In regards to such

arguments, see the response directed to the independent claims.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the

Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/James S. Wozniak/

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